

In the Claims:

Please cancel claims 1 to 20 without prejudice and add new claims 23 to 45 as follows:

Claims 1 to 20.(canceled)

21.(previously presented) A substrate for extreme ultraviolet (EUV)

microlithography, wherein said substrate comprises

a base layer consisting of a ceramic or glass ceramic material having a coefficient of thermal expansion of at most $0.1 \text{ ppm}^{\circ}\text{C}$; and

a covering layer adhering to the base layer, said covering layer comprising silicon dioxide or Ti-doped silicon dioxide and having a surface roughness of at most 0.5 nm rms and a coefficient of thermal expansion of at most $1 \text{ ppm}^{\circ}\text{C}$, said covering layer comprising at least one individual layer.

22.(previously presented) A substrate for extreme ultraviolet (EUV)

microlithography, wherein said substrate comprises

a base layer consisting of a ceramic or glass ceramic material having a coefficient of thermal expansion of at most $10 \text{ ppb}^{\circ}\text{C}$; and

a covering layer adhering to the base layer, said covering layer having a surface roughness of at most 0.5 nm rms and a coefficient of thermal expansion of at most $0.5 \text{ ppm}^{\circ}\text{C}$, said covering layer comprising at least one individual layer.

23.(new) The substrate as defined in claim 22, wherein said base layer comprises Zerodur®, Zerodur® M, Clearceram®, Clearceram® Z or cordierite-containing ceramics.

24.(new) The substrate as defined in claim 22, wherein said covering layer comprises silicon dioxide and at least one dopant, said at least one dopant comprising at least one other metal oxide, F or a mixture thereof.

25.(new) The substrate as defined in claim 24, wherein said at least one dopant is TiO_2 and said TiO_2 is included in said covering layer in an amount such that said coefficient of thermal expansion of said covering layer matches said coefficient of thermal expansion of said base layer.

26.(new) The substrate as defined in claim 22, wherein said base layer has a thickness that is at least 5 mm and said covering layer has a thickness of from 0.01 to 100 μm , so that physical properties of the substrate are determined by physical properties of said base layer.

27.(new) The substrate as defined in claim 22, wherein said covering layer is provided on said base layer by a method comprising applying said covering layer on said base layer by one of a chemical vapor deposition process, a sputtering process with or without ion bombardment and a sol-gel process.

28.(new) A process for producing a substrate for extreme ultraviolet (EUV) microlithography, wherein said substrate comprises a base layer and a covering layer applied over the base layer, said base layer consists of a ceramic or glass ceramic material having a coefficient of thermal expansion of at most 10 ppb/°C and said covering layer has a surface roughness of at most 0.5 nm rms and a coefficient of thermal expansion of at most 0.5 ppm/°C, said covering layer comprising at least one individual layer,

wherein the process comprises the steps of:

- a) providing said base layer of said ceramic or said glass ceramic material with said coefficient of thermal expansion of at most 10 ppb/°C,
- b) applying said covering layer over said base layer, said covering layer having said coefficient of thermal expansion of at most 0.5 ppm/°C, and then
- c) if appropriate, polishing the covering layer.

29.(new) The process as defined in claim 28, wherein said covering layer is applied by one of chemical vapor deposition, sputtering with or without ion bombardment and a sol-gel process.

30.(new) The process as defined in claim 28, wherein said covering layer comprises silicon dioxide and TiO₂ and said TiO₂ is included in said covering layer in an amount such that said coefficient of thermal expansion of said covering layer matches said coefficient of thermal expansion of said base layer.

31.(new) The process as defined in claim 28, wherein said base layer has a thickness that is at least 5 mm and said covering layer has a thickness of from 0.01 to 100 μm , so that physical properties of the substrate are determined by physical properties of said base layer.

32.(new) The process as defined in claim 28, wherein said covering layer is applied to said base layer by chemical vapor deposition and said chemical vapor deposition comprises plasma enhanced chemical vapor deposition, plasma assisted chemical vapor deposition or plasma impulse vapor deposition.

33.(new) The process as defined in claim 28, wherein said covering layer is after-treated by an ion beam figuring process.

34.(new) The process as defined in claim 28, wherein said covering layer comprises silicon dioxide and further comprising doping said covering layer with at least one other metal oxide, F or a mixture thereof.

35.(new) An element for extreme ultraviolet microlithography, comprising a substrate and a reflective layer provided on the substrate;

wherein said substrate comprises a base layer consisting of a ceramic or glass ceramic material having a coefficient of thermal expansion of at most 10 $\text{ppb}/^\circ\text{C}$ and a covering layer applied over the base layer, said covering layer having a surface roughness of at most 0.5 nm rms and a coefficient of thermal

42.(new) The element as defined in claim 35, wherein said base layer has a thickness that is at least 5 mm and said covering layer has a thickness of from 0.01 to 100 μm , so that physical properties of the substrate are determined by physical properties of said base layer.

43.(new) A process for making an element for extreme ultraviolet microlithography, said process comprises the steps of:

- a) providing a substrate a base layer consisting of a ceramic or glass ceramic material having a coefficient of thermal expansion of at most 10 ppb/ $^{\circ}\text{C}$ and a covering layer applied over the base layer, said covering layer having a surface roughness of at most 0.5 nm rms and a coefficient of thermal expansion of at most 0.5 ppm/ $^{\circ}\text{C}$, said covering layer comprising at least one individual layer;
- b) if appropriate, polishing the covering layer; and
- c) providing a reflective layer adhering to the covering layer.

44.(new) The element as defined in claim 43, wherein the reflective layer is a multilayer coating consisting of alternating layers of Mo and Si.

45.(new) The element as defined in claim 43, further comprising an absorbing layer, provided over the reflective layer.